RTCA SC-206/EUROCAE WG-76

Aeronautical Information Services (AIS) Data Link

Operational Services and Environment Definition (OSED) for AIS / MET Data Link Services

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What OSED Includes

- This OSED describes data link services for two aeronautical information / ***data*** categories:

  AIS = Aeronautical Information Service

  MET = Meteorological Information Service

Why AIS/MET DL Needed??

- Provides data link support to both US and European future ATM concept initiatives:
  - US: Next Generation Air Transportation System (NextGen)
  - Europe: Single European Sky ATM Research (SESAR)
- Pilots now included in Collaborative Decision Making (CDM)
  - Need for common/shared picture of the airspace situation
  - Need for standards and system interoperability
  - Need for policy and guidance on cockpit use

AIS and MET Data Link Services

- Joint RTCA SC-206/EUROCAE WG-76 formed and tasked to:
  - Define requirements for AIS and MET Data Link Services
  - Develop necessary data link system "standards and approval" documentation
    - Insures standardization and interoperability
- Organized into two Subgroups
  - AIS Subgroup
  - MET Subgroup
- Meetings
  - Meet quarterly, Alternate between US and Europe
  - 1st Meeting: July 2005
  - 8th Meeting: Rockwell Collins/Melbourne, Florida; 2-4 April 2007
- Approach
  - Follow guidelines for approval of Air Traffic Service data link communications

RTCA DO-264 / EUROCAE ED-78

"Guidelines for Approval of the Provision and Use of Air Traffic Services Supported by Data Communications"

- Provides guidance and templates for "**Minimum Acceptable Criteria**" needed to support "**Approvals**"
  - **Approvals** include:
    - Aircraft Type Design Approval (i.e., TSO, STC)
    - ATS Provider Operational Approval (?? – a "New Cat")
    - Operator Operational Approval (i.e., Ops Specs, AC)
  - **Minimum Acceptable Criteria** are provided as either:
    - **Process Objectives**, and/or
    - Guidance for Evidence (that the Process Objective was met)
  - Key **Process Objectives** include:
    - **OSED – Operational Services and Environment Definition**
    - SPR – Operational Safety and Performance Requirements
      - OSA – Operational Safety Assessment
      - OPA – Operational Performance Assessment
    - INTEROP – Interoperability Requirements

OSED Outline

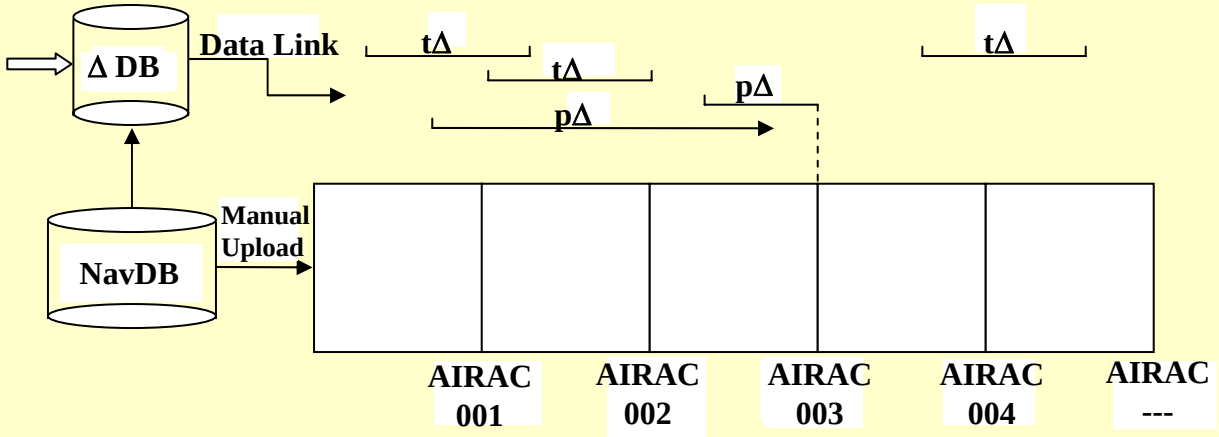
1. Introduction
2. Scope & Objective
3. Expected Benefits, Anticipated Constraints & Associated Human Factors
4. Existing Operating Methods
5. Operating Method for Data Link Services
6. **Aeronautical Information Service (AIS)**
   - **6.1 Aeronautical Update**
   - **6.2 Baseline Synchronization**
7. **Meteorological Information Services (MET)**
   - **7.1 Pilot Decision Support Categories**
   - **7.2 Data Categories**
   - 7.3 METLINK Products & Display
   - **7.4 Weather Planning Decision Service (WPDS)**
   - **7.5 Weather Near-Term Decision Service (WNDS)**
   - **7.6 Weather Immediate Decision Service (WIDS)**
   - 7.7 METLINK Service Modes

Aeronautical Information Service (AIS)

- Aeronautical Updates
  - Replaces conventional means of disseminating these data changes (e.g., via paper NOTAM)
  - All Aeronautical Data changes are sent via data link to the aircraft; including
    - temporary deltas (tΔ) = data that is effective for a limited time, or
    - permanent deltas (pΔ) = data that has changed or will change permanently and should ultimately be included in a new baseline data set
- Baseline Synchronization
  - Provides "continuous" revision of on-board baseline data via data link to the aircraft, independent of the AIRAC cycle
    - A complete synchronization replaces entire dataset(s) (e.g. Nav Data Base, Terrain Data Base)
    - A sync update only contains the delta information from the previous sync specific to the dataset

Note: It is envisioned that the sync update would be the preferred method of maintaining the on-board datasets thereby minimizing data link usage.

NAV Data Base + Aeronautical Update

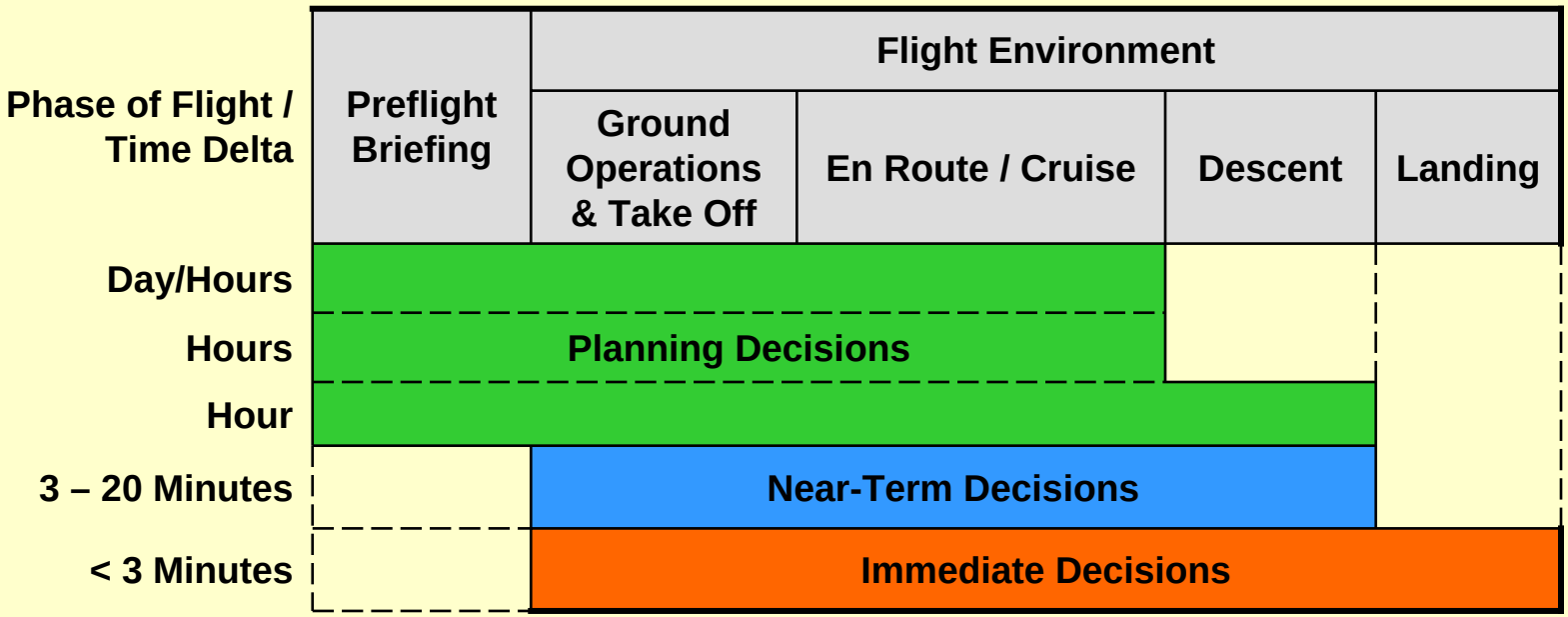


Meteorological Information Service (MET)

- Three MET services are defined based on classifications of pilot use or cockpit application(s)
  - Planning Decisions (greater than 20 minutes up to two hours or more)
  - Near-Term Decisions (3-20 minutes)
  - Immediate Decisions (immediate to less than 3 minutes)

- Candidate MET products are classified relative to the pilot use or cockpit application

Pilot Use / Cockpit Application



Candidate MET Products

Candidate Meteorological Products	MET Data			
	Point Data	Area Data	Vector Graphic	Gridded Data
Aerodrome Products				
Meteorological Aerodrome Report (METAR)	P / N			
Terminal Aerodrome Forecast (TAF)	P			
Wind Shear Warnings		N / I		
Volcanic Activity Report		P / N / I		

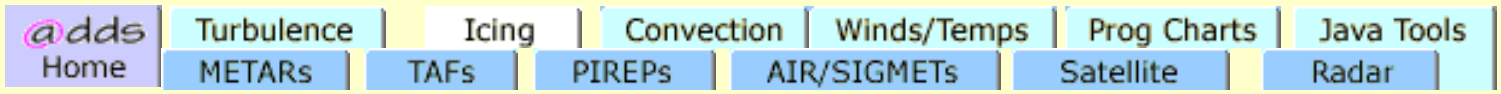
P = Planning Decision Product

N = Near-Term Decision Product

I = Immediate Decision Product

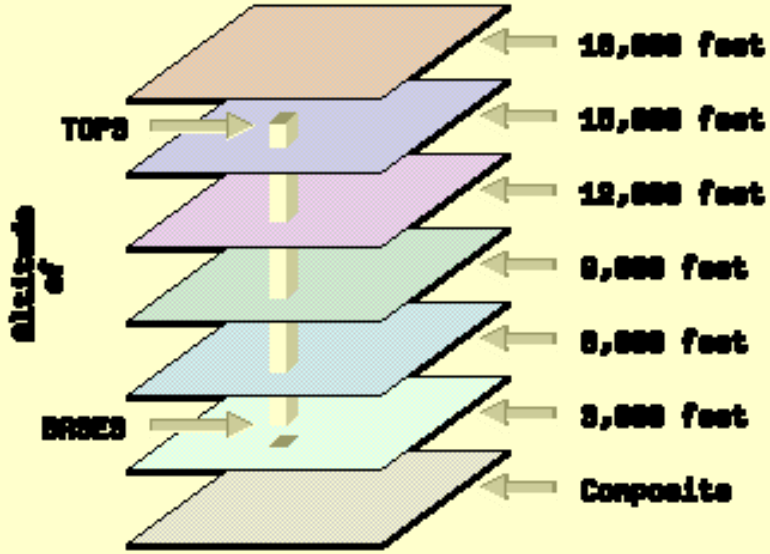
Future Product (?): AWC – ADDS - Icing

FYI/Help



•Current/Forecast Icing Potential (CIP/FIP)
[CIP Performance Statistics]
[FIP Performance Statistics]

0200 UTC CIP
0200 UTC CIP-SLD
0300 UTC FIP
0400 UTC FIP
0600 UTC FIP
0900 UTC FIP
1200 UTC FIP

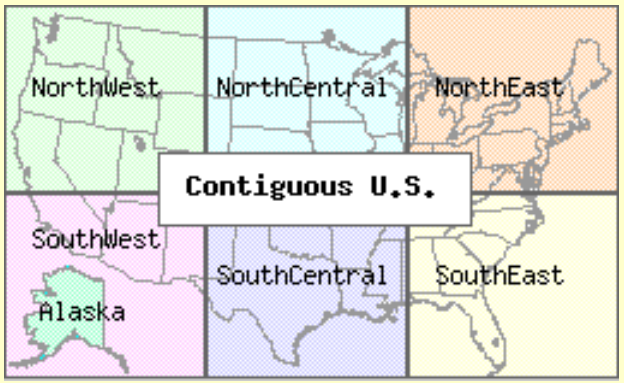


•See more detailed CIP/FIP plots in the Java Flight Path Tool

•Freezing level graphics:
0-hour 3-hour 6-hour 9-hour 12-hour

•Current Icing advisories:

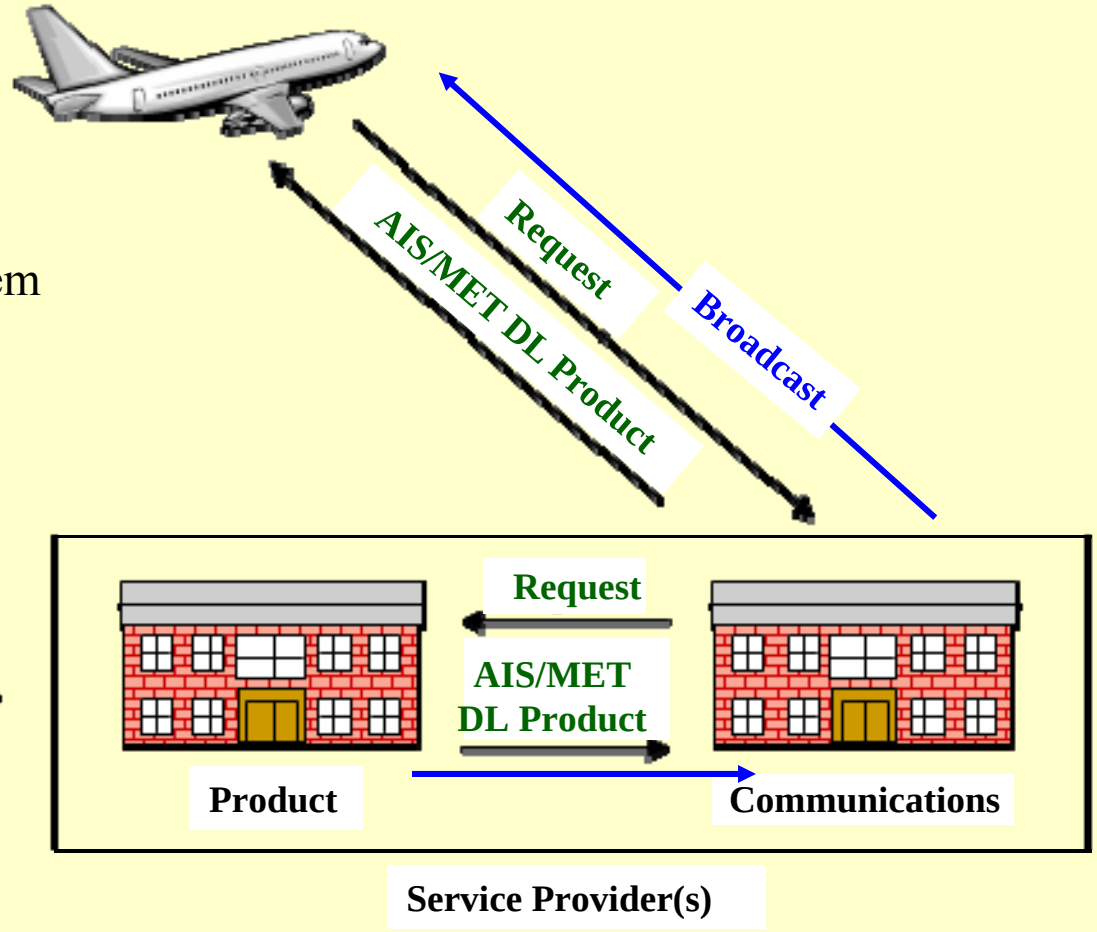
•Pilot reports of Icing:



Data Link Service Illustration

AIS/MET DL Service Implementation

- Could include both AIS & MET data
  - SPR/INTEROP criteria for combined service would be based on the most "critical" data
- Could be provided through either a Broadcast system and/or two-way system
  - RCP and ATM procedures will determine acceptable method(s)



Summary

- AIS and MET Data Link Services are being defined
  - Minimal existing ICAO / WMO (or FAA) guidance that may be applied to defining OSED criteria

- AIS/MET OSED Schedule
  - 11-15 June: Complete draft OSED at the 9th 206/76 meeting hosted by Swedish LFV Group (Norrköping, Sweden)
  - ▶ Jul/Aug – Sep: Distribute OSED for Final Review and Comments (FRAC)
  - ▶ 8-12 Oct: Resolve FRAC inputs at the 10th 206/76 meeting hosted by Boeing (Seattle, Washington)

- ▶ Meetings open for all to attend – FRAC inputs solicited
  - Proceedings posted on website: http://www.avmet.com